Introductions

- Thank you for joining us today.
- To introduce yourself, please enter your name and agency/organization in the chat box and send to all.

WISCONSIN CONNECT

Wisconsin Collaborative of Treatment Professionals
FOR EDUCATION AND CAPACITY TRAINING

Welcome and Thank You for attending

ECHO Etiquette

- Stay muted when we are not speaking to reduce extraneous noise
- Use the “raise hand” function to ask a question or make a comment, or put it in the Chat Room
- Be respectful of everybody, even if their ideas don’t resonate with you
- Never disclose protected health information or any identifying information regarding the case study
- Help us keep the learning environment productive, positive, helpful, and safe

Reminders

- If you ever have questions or comments about any of our programs, please use the "Contact" function on the Wisconsin CONNECT website
- The didactic will be recorded and posted on the website along with responses to your questions.
- This is your last chance to **"introduce yourself"** to your colleagues in the **chat room**. Once the didactic begins, we'll reserve that space for questions.

Accreditation: CME

- This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the Wisconsin Association for Perinatal Care (WAPC) and the Center for Urban Population Health (CUPH).
- The Wisconsin Association for Perinatal Care (WAPC) is accredited by the Wisconsin Medical Society to provide continuing medical education for physicians.
- The Wisconsin Association for Perinatal Care (WAPC) designates this internet live course for a maximum of 1 *AMA PRA Category 1 Credit™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
- To receive credit, participants must attend the entire activity.

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Neonatal Withdrawal: Back to Basics

June 10 ECHO

Elizabeth Goetz

Objectives

- Explain WHY babies exposed to different substances in utero have withdrawal syndromes
- Describe HOW to recognize babies at risk for or experiencing withdrawal symptoms
- Describe WHAT can be done to support babies who are experiencing withdrawal symptoms after birth

Impact of Substances on Newborns: Overview

- Toxicity
  - Clinical signs improve after exposure is removed
  - Example: Tobacco, Cocaine, methamphetamine, SSRI
- Exposure
  - Abnormalities consistent with drug effect
  - Example: Alcohol
- Withdrawal
  - Clinical signs worsen after exposure is removed
  - Example: Opioids

What is Neonatal Abstinence Syndrome (NAS) ?

- **NAS** is a general term describing withdrawal symptoms in newborns. Includes opioids but also includes withdrawal-like symptoms from non-opioids
- When newborns have been exposed to **opioids or narcotics** before birth we worry about a type of NAS called Neonatal Opioid Withdrawal Syndrome **NOWS**
  - Examples of opioids and narcotics include Methadone, Subutex or Suboxone, Heroin, Vicodin or Percocet
  - Most babies (60-90%) exposed to opioids during pregnancy will have NOWS
- **NAS/NOWS** can be mild or severe

Identifying Newborns at Risk

- All infants > 35 weeks at risk of NAS!
- Identify newborns at risk based on maternal history
  - Known history of substance abuse
  - Unexplained complications of pregnancy
  - Maternal medical complications
  - Maternal behaviors
- Identify newborns at risk based on signs and symptoms in infant that suggest NAS

- Differential Diagnosis
  - Hypoglycemia
  - Hypocalcemia
  - Hyperthyroidism
  - Intracranial hemorrhage
  - Sepsis
  - Neonatal encephalopathy
  - Metabolic disease
  - Hyperviscosity

NAS: What to watch for

Substance	Signs and Symptoms	Onset
Alcohol	Hyperactivity, crying, irritability, poor suck, tremors, seizures; onset of signs at birth, poor sleeping pattern, hyperphagia, diaphoresis	Hours
Barbiturates	Irritability, severe tremors, hyperacusis, excessive crying, vasomotor instability, diarrhea, restlessness, increased tone, hyperphagia, vomiting, disturbed sleep; onset first 24 h of life or as late as 10–14 d of age	Hours-Days
Caffeine	Jitteriness, vomiting, bradycardia, tachypnea	Hours
Diazepam (Valium)	Hypotonia, poor suck, hypothermia, apnea, hypertonia, hyperreflexia, tremors, vomiting, hyperactivity, tachypnea	Hours-Weeks
SSRIs	Crying, irritability, tremors, poor suck, feeding difficulty, hypertonia, tachypnea, sleep disturbance, hypoglycemia, seizures	Hours-Days
Marijuana	No specific identified withdrawal syndrome in newborns	

PEDIATRICS Volume 129, Number 2, February 2012

Clinical Presentation of NOWS

- 55-94% of babies exposed to opioids in utero will develop signs of NAS
- No clear correlation between dose of maternal opioid and severity of withdrawal
- Clinical presentation and course of NAS depends on many factors
  - Opioid of choice
  - Maternal drug history
  - Maternal and Infant metabolism
  - Placental metabolism
  - Exposure to other substances.

NOWS: Signs and Symptoms

CNS Irritability (Brain)

- Tremors
- Irritability
- Wakefulness
- High-pitched crying
- Increased tone
- Hyperactive reflexes
- Seizures

Autonomic Instability (Nerves)

- Increased sweating
- Nasal stuffiness
- Fever
- Mottling
- Temperature instability
- Yawning and sneezing

GI Dysfunction (Gut)

- Poor feeding
- Uncoordinated and constant sucking
- Vomiting
- Diarrhea
- Dehydration
- Poor weight gain

When does this happen?

Drug	Onset	Duration	Frequency
Heroin	24-48 hours	8-10 days	40-80%
Methadone	48-72 hours	30 + days	13-94%
Buprenorphine	36-60 hours	28 + days	22-67%
Prescription Opioids	36-72 hours	10-30 days	5-20%
SSRIs*	24-48 hours	2 -6 days	20-30%
Methamphetamines	24 hours	2-7 days	2-49%

Kokothka. Neonatal Abstinence Syndrome. Pediatrics 2014

Modifiers of NAS

Many factors can worsen signs and symptoms of NAS

- Hunger
- Overstimulation

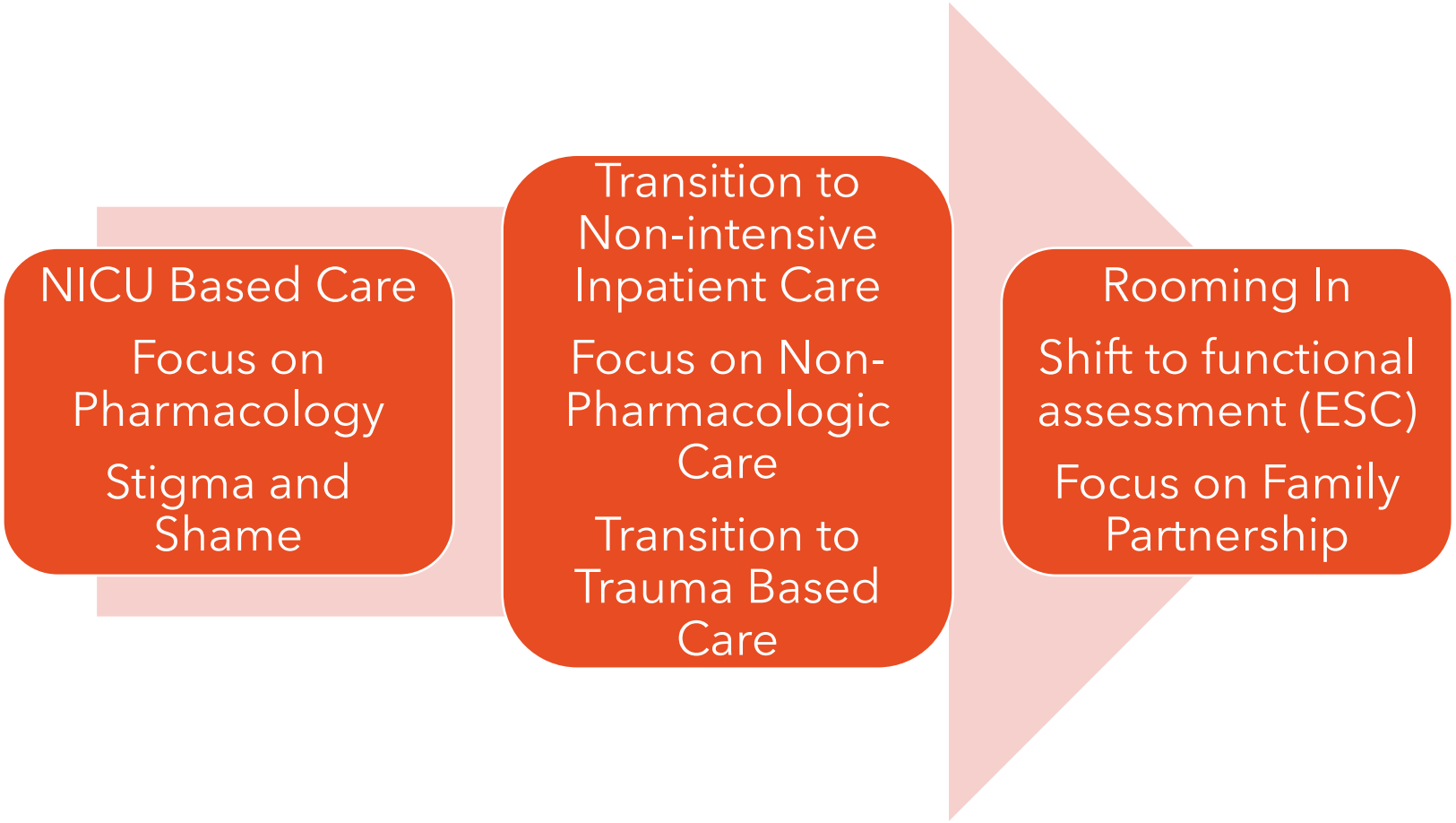
Many factors can improve signs and symptoms of NAS

- Frequent feeding
- Holding and rocking baby
- Swaddling baby
- Keeping a quiet dark environment
- Pacifier use for non-nutritive sucking

Caring for NAS in the Hospital

- To make sure that we give all babies the best care possible we have a standard way to care for all babies at risk for NAS
  - Toxicology testing on mom and baby
  - All babies will have vital signs every 4 hours
  - Monitoring for signs of NAS/NOWS
    - Scoring symptoms
    - **Functional monitoring:** can babies **EAT** enough, **SLEEP** enough, and **CONSOLE**

Evolving Model of Care



Eat, Sleep, Console

- Parents and care providers partner to ensure that baby can eat, sleep and console
- Emphasis on non-pharmacologic interventions to make sure that baby can:
  - Eat at least 1 oz or breastfeed well
  - Sleep for more than 1 hour at a time
  - Console (settled down) within 10 minutes

Breastfeeding

- Breastfeeding is best for babies
- Small amounts of substances will go through breastmilk. This is considered reasonably safe
- Breastfeeding and illicit substance use is a hot topic!
  - Different providers have different approaches
  - Different professional societies have different recommendations
  - Risk vs. benefit

Treatment for NAS

- **Non-Pharmacologic Care of NAS**
  - Holding, rocking, and feeding your baby can prevent withdrawal symptoms or make symptoms less severe
  - The treatment for NAS is MOM!

Pharmacologic Care of NAS

- Treat withdrawal symptoms with an opiate

Going Home

- Symptoms of NAS can last for a long time
- Counsel families that babies may have:
  - Fussiness
  - Feeding problems
  - Slow weight gain
  - Difficulty sleeping
- Build on non-pharmacologic strategies used in the birth hospitalization
- Prepare families for transition to home

Post-Discharge Basics

- Continue to monitor for signs and symptoms of NAS
  - Involve family!
- Monitor for feeding problems
  - Consider supplementing with “Sensitive” formula for babies who are poor feeders or irritable
  - Watch for increased withdrawal signs if breastfeeding mom stops breastfeeding or stops opiate
- Connect with social supports

It takes a village…..

- Who are the primary supports for the family?
- What resources does this family have and what resources do they need help with?
- Why is this family vulnerable – are there unaddressed needs that can be helped?
- How does the family's culture support or maybe not support the needs of the family?
- Where are the critical points of support that this family can fall back on?

Risk for Early Readmission

- Infants with NAS 2.5 times more likely to be readmitted within 30 days of birth
  - Drug withdrawal symptoms 26.8%
    - Patrick Hosp Peds 2016
- Growth and Failure to Thrive
  - Calorie demands can be as much as 1.5% higher in infants experiencing NAS/NOWS
  - Feeding issues common
  - Growth can be affected by vomiting and diarrhea

Sudden Infant Death Syndrome

- Physiologic reasons?
  - Delayed response in minute ventilation to hypercarbia and hypoxia
  - Altered sleeping patterns.
- Environmental reasons?
  - Sleep environment

- Risk of SIDS 10 times higher in cohort from AU
- Study of newborns in NYC 4 times higher
  - Uebel Pediatrics 2015

Increased Mortality

- There is NOT increased mortality for infants with NAS during the birth hospitalization
- There IS increased risk for death in childhood

- 3842 Australian Children with diagnosis of NAS/NOWS compared to population averages
  - Odds of death in childhood 3.3 times higher
  - Odds of death in the first year of life 7.6 times higher
    - Uebel Pediatrics 2015

Care of the Family

- Identify caretakers for baby
  - 70% discharge home with parent
  - 25% discharge home with guardian or foster parent
    - Patrick, Pediatrics 2016

- 147% Increase in number of children entering foster care due to prenatal substance use since 2000
    - Meinhofer JAMA Peds 2019

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Thank You!